AMENDMENT TO THE CLAIMS

WHAT IS CLAIMED IS:

1. (Currently amended) A method for estimating naturalness of synthesized speech, wherein naturalness is a subjective quality of synthesized speech, the method comprising:

      generating a set of synthesized utterances <u>from textual information</u>;

      subjectively rating each of the synthesized utterances;

      calculating a score for each of the synthesized utterances using an objective measure, the objective measure being a function of textual information ~~derived from~~ <u>used to form</u> the utterances;

      ascertaining a relationship between the scores of the objective measure and subjective ratings of the synthesized utterances; and

      using the relationship to estimate naturalness of synthesized speech.

2. (Currently amended) The method of claim ~~1~~ <u>30</u> wherein the objective measure comprises an indication of a position of a speech unit in a phrase.

3. (Currently amended) The method of claim ~~1~~ <u>30</u> wherein the objective measure comprises an indication of a position of a speech unit in a word.

4. (Currently amended) The method of claim ~~1~~ <u>30</u> wherein the objective measure comprises an indication of a category for a phoneme preceding a speech unit.

5. (Currently amended) The method of claim ~~1~~ <u>30</u> wherein the objective measure comprises an indication of a category for a

phoneme following a speech unit.

6. (Currently amended)   The method of claim ~~1~~ 30 wherein the objective measure comprises an indication of a category for the tone of a preceding speech unit.

7. (Currently amended)   The method of claim ~~1~~ 30 wherein the objective measure comprises an indication of a category for the tone of a following speech unit.

8. (Currently amended)   The method of claim ~~1~~ 30 wherein the objective measure comprises an indication of a prosodic mismatch between successive speech units.

9. (Currently amended)   The method of claim ~~1~~ 30 wherein the objective measure comprises an indication of level of stress of a speech unit.

10. (Currently amended)   The method of claim ~~1~~ 30 wherein the objective measure score for each synthesized utterance is a function of a length of said each synthesized utterance.

11. (Original) The method of claim 10 wherein the length comprises a number of speech units in an utterance.

12. (Currently Amended)   The method of claim ~~1~~ 30 wherein calculating a score includes generating context vectors for each synthesized utterance wherein the context vectors ~~comprises~~ comprise at least two coordinates of textual information from a set including:

      an indication of a position of a speech unit in a phrase;
      an indication of a position of a speech unit in a word;
      an indication of a category for a phoneme preceding a speech

unit;

an indication of a category for a phoneme following a speech unit;

an indication of a category for the tone of a preceding speech unit;

an indication of a category for the tone of a following speech unit; and

an indication of a level of stress of a speech unit; and

an indication of a degree of coupling with a neighboring speech unit.

13. (Currently amended) The method of claim 12 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least three coordinates of textual information from the set.

14. (Currently amended) The method of claim 12 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least four coordinates of textual information from the set.

15. (Cancelled)

16. (Currently amended) The method of claim 12 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least six coordinates of textual information from the set.

17. (Original) The method of claim 12 wherein the objective measure includes an indication of prosodic mismatch of successive speech units.

18. (Original) The method of claim 12 wherein the coordinates are weighted.

19. (Currently Amended) A method for developing a speech synthesizer, the method comprising:

   obtaining a set of synthesized utterances based on textual information from the speech synthesizer;

   subjectively rating naturalness of each of the synthesized utterances;

   calculating a score for each of the synthesized utterances using an objective measure, the objective measure being a function of textual information of speech units for each of the utterances;

   ascertaining a relationship between the scores of the objective measure and ratings of the synthesized utterances;

   varying a parameter of the speech synthesizer;

   obtaining speech units for another utterance after the parameter of the speech synthesizer has been varied; and

   calculating a second score for said another utterance using the objective measure; and

   using the relationship and the second score to estimate naturalness of said another utterance.

20. (Currently amended) The method of claim ~~19~~ 31 wherein obtaining speech units for another utterance includes obtaining speech units for a second set of utterances, wherein calculating a second score includes calculating corresponding scores for each of

the utterances of the second set of utterances, and wherein using the relationship includes using the relationship to estimate naturalness of each of said second set of utterances.

21.   (Currently amended) The method of claim ~~19~~ 31 wherein the parameter comprises an amount of speech units available for synthesis.

22.   (Currently amended) The method of claim ~~19~~ 31 wherein the parameter comprises an algorithm for selecting speech units.

23. (Currently amended) The method of claim ~~19~~ 31 wherein calculating a score includes generating context vectors for each synthesized utterance wherein the context vectors ~~comprises~~ comprise at least two coordinates of textual information from a set including:

    an indication of a position of a speech unit in a phrase;
    an indication of a position of a speech unit in a word;
    an indication of a category for a phoneme preceding a speech
        unit;
    an indication of a category for a phoneme following a speech
        unit;
    an indication of a category for the tone of a preceding
        speech unit;
    an indication of a category for a tone of a following speech
        unit; and
    an indication of a level of stress of a speech unit.

24. (Currently amended) The method of claim 23 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least three coordinates of textual information from the set.

25. (Currently amended) The method of claim 23 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least four coordinates of textual information from the set.

26. (Currently amended) The method of claim 23 wherein calculating a score includes generating context vectors for each of the synthesized utterances wherein the context vectors ~~comprises~~ comprise at least five coordinates of textual information from the set.

27. (Cancelled)

28. (Original) The method of claim 23 wherein the objective measure includes an indication of prosodic mismatch of successive speech units.

29. (Original) The method of claim 23 wherein the coordinates are weighted.

30. (New) The method of claim 1 wherein the objective measure is a function of a concatenative cost of the textual information used to form words in the utterances.

31. (New) The method of claim 19 wherein the objective measure is a function of a concatenative cost of the textual information used to form a word in each utterance.